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CADD News

this issue

How to get CADD Training

CADD Services has officially migrated administration of all CADD Training over to the NC Learning Center, also known as the LMS. The NC Learning Center is managed by Office of State Personnel and they have mandated use of the system for almost all Training. As such, NC Learning Center will now handle requesting, approving, scheduling, and tracking of all CADD Training.

The NC Learning Center can be accessed by a new Learning tab on Beacon. Click here for a 5 minute overview video of CADD training in the new LMS! A few important points from the video are noted below:

1) Two levels of training approval – All training requires Manager approval and Unit Training Coordinator approval. These approvals must take place in the LMS before a seat is reserved in training

2) First Come, First Serve – There is no longer a priority list managed for CADD Training. All training is first come, first served. If spots are filling up in a certain session (class), it is important that manager approval and training coordinator approval occur in a timely manner to have the best chance of getting into a desired session.

3) Session Full? - If a session is full or if you can not make a scheduled session, you can place your name on an interest tracking list which will be monitored by CADD Services to determine needs for future sessions. When future sessions are created, the individuals on the interest tracking list will be notified by the LMS. However, they are not guaranteed a session spot and still must go through the session request/approval process in order to secure a seat in the newly scheduled session.

If you have any questions regarding CADD Training in the new LMS, please contact Steve Brown at 919-707-7032 or email spbrown1@ncdot.gov

What Were They Thinking?

Joe Agron editor of American School & University magazine recently wrote:

"A 47-story skyscraper In Benidorm, Spain, is missing one very important design element: an elevator. The Intempo Skyscraper construction project, originally planned to be 20 stories but grew to a 47 story showpiece building as the developers pushed the envelope.

In their haste to complete this edifice all parties involved in the construction project neglected to update the plans to include the necessary elevators for a 47-Story facility"

Now while this is funny and a bit hard to believe (it is a true story, I verified it after reading the editorial). It points out that even in today's electronic world that mistakes and oversights are still made in the planning , design, construction and maintenance of major and minor projects.

Actually with all the different groups and people involved with a highway or bridge project these days it is amazing that we don't have more mistakes than we do.

On one hand Technology has helped make mistakes less common . By using it to help communicate and distribute information quickly and reliably to all the various stake holders. On the other hand Technology has also made it easier for mistakes to go unnoticed simply do to the mass of data one now has to deal with.

Bottom line is design isn't a push button enterprise. It still takes skill and attention to detail to design, build and maintain a highway project, even with CADD. Something to think about.

MicroStation Tips & Hints

From a presentation by Inga Morozoff for the NCLUG

PointClouds – Integration of the Pointools vortex engine provides you with an easy-to-use, high-performance option for visualizing data from laser scanners. A few cool things you can do with point clouds is to display them on a 2D sheet, use a view's clip volume to clip the point cloud, assign the point cloud to a level, manipulate the point cloud with the standard MicroStation tools (Move, Rotate, Scale…), and change the size of the points via the line weight setting which is very useful when you're zoomed close and just a few points are visible.

Quick Info - Rather than using the Element Information dialog to retrieve bits of information about the selected element, simply use the Quick Info dialog. To do that, hover your cursor over the element and press ALT + RESET. The resulting compact dialog allows you to review and even edit the symbology values.

Reference Activation - A new capability lets you edit a reference in-place. That is, you can edit a reference from within the active model. To do this you first must activate the reference. When you activate a reference, you must open it for write access thus blocking any other users from modifying that file. As you activate references, you acquire their locks and hold them until you either explicitly release them or exit your session. The reason that deactivate doesn't automatically release the lock, is that once the lock is relinquished it is not possible to undo changes. So, if you are actively working on a set of 3 files jumping from one to another via activation, it makes sense to hold the locks until you decide you're ready to release them.

Running Coordinates – To enable the display of running coordinates, right-click on the status bar and turn on Running Coordinates from the available options. As you move your cursor, the coordinates of your current position display according to the active Tentative Point Mode. When you left-click, a menu displays six options. When dealing with a Geocoordinate System, such as latitudes and longitudes, choose ACS Position.

Save Fence or Selection Set – To save a selection set or the contents of a fence to a new file, navigate to the Save As dialog, select Options > Filter > Geometry and then choose either Everything, Fence, or Selection Set.

Selection Overlap mode is right to left – To select elements in overlap mode, drag the selection box right to left. If you go left to right it's the inside mode.

Start a Windows application - To start a Windows application without leaving MicroStation use the % key-in

Start a new session of MicroStation – To start a new session of MicroStation, use the new session key-in. For example, new session myfile.dgn, default will open default mode in MyFile.dgn

MicroStation two letter Key-Ins

While you can use a dialog box or a pull down menu for most things in MicroStation, it can be quicker and easier in most cases to use the old fashion key-in method. In the key-in window simple key–in the correct 2 letter command and hit the enter key. For example to create a cell key in *cc=cellname, description* and hit Enter. See which of the following key-ins you can take advantage of.

Set the active angle
AA=<angle>

Activate and place a cell absolute
AC=<cell name>

Attach a menu
AM=<menu name, type>

Set active pattern cell
AP=<pattern cell>

Activate and place a cell relative
AR=<cell name>

Set Active scale
AS=<scale>

Set active depth relative to the view
AZ=<depth>

Create cell in current Lib.
CC=<cell name, desc.>

Delete cell from current Lib.
CD=<cell name>

Setup cell matrix for placement
CM=<rows,columns,row space, column space>

Set active color
CO=<color number>

Rename cell in Lib.
CR=<old name, new name>

Attach a color table
CT=<color table name>

Display depth / relative to clipping plane
DD=<front,back>

Precision input /distance and direction
Di=<distance, direction>

Precision input/ delta distance & direction
DL=<Dx,Dy,Dz>

Display depth relative to Z axis
DP=<front,back>

Display text file
Dr=<filename>

Delete a saved View
DV=<view name>

Precision Input / delta on view axis
DX=<Dx,Dy,Dz>

Set Active depth /relative to Z axis
DZ=<distance>

Save Fence contents to a file
FF=<file name>

Set Active font
FT=<font number>

Set Global origin/ 0,0 set it to lower-left
Go=<x,y,z>

Set active Grid Reference
GR=<distance>

Trouble remembering where the upf is located?

You can open the MicroStation menu item Workspace -> About Workspace. In the middle of the dialog it will show the path to the file (hover over it to see the full path).

More MicroStation Tips & Hints

From a presentation by Inga Morozoff for the NCLUG

ALT+DATA to Match Attributes - To quickly match an elements level, colour, line style or line weight: hold the pointer over the element, and press ALT+Data. The active attributes will change to match the element under the pointer. To be even more productive, reconfigure ALT+DATA to execute the key in MATCH ELEMENT FROM CURSOR which is the SmartMatch tool.

Auto Focus Tool Settings – When enabled, this workspace preference prevents the input focus from moving automatically to the Home position when Reset is pressed. Instead the focus stays in AccuDraw which makes it a snap to position a new origin by pressing O. If you need to go home, just press ESC.

Ctrl+Tentative – Use this combination of keys to quickly move the AccuDraw compass to the point snapped to. Same as doing Tentative + O

Drag and Drop to Attribute Pickers – Position the Element Selection arrow over an element, when it highlights, drag it to the Attributes toolbox and drop it on the icon for the setting. For example, to set the Active Line Weight to match an element's line weight, drag the element and drop it on the Active Line Weight icon in the Attributes toolbox. If you enable the display of the Symbology Preview box in the Attributes toolbox, you can use the drag and drop technique to change all of the above settings to match the attributes of an existing element.

Drag selection support during manipulate commands - After selecting a manipulation tool, you can now select multiple elements by dragging a window around them. In addition, the manipulate tools support the drag window at the beginning of the command, or after the first group has been selected. You can then hold the CTRL down to add additional elements or CTRL+Drag for multiple elements. Note that this is not a Selection Set.

Element Selection Tabs - Five attributes tabs, which are hidden by default, are added to the Element Selection tool. To display one or all of these tabs, right-click on the attributes section of the tool settings window. From the menu that opens, turn on the desired attributes.

Elements Under Transparent Dialogs - To enter data points or snap points under a transparent dialog, hold the left button down and drag into the dialog. For example, to snap to an existing element that lies under a transparent dialog and while Place Smartline is active, enter a data point and drag the left mouse button to the target element.

Eye Dropper – In the True Color tab of the Active Color dialog, you can select, hold and drag the eyedropper to anywhere on your monitor to select a color.

On The Fly Links - MicroStation enables you can attach one or more links to an element in the open DGN file. This allows you to click the element and open the files that are linked to it. For example, you could add a link to a Microsoft Excel workbook that contains specifications and costs for beams, or use a key in link to quickly navigate to the next drawing sheet. There are several methods to add links to elements. To add a key-in, file or URL link, choose Add Link from the right-click context menu. To add a model link, select a model from the model dialog, start dragging it onto the element and then press the ALT key down. In this case, a link to the model will be automatically created. Several menu items for working with links are on the Reset Pop-up menu. If you right-click an element without a link, you can select Add Link. If you right-click an element with a link attached to it, you can select Open Link, Edit Link, or Remove Link. If you right-click in a view window, you can choose Select Links > All, Valid, or Invalid.

Open Windows Explorer to Active Folder – Use the %% key-in to open Windows Explorer to the folder of the active file. An alternate is $% explorer /e, /select, $(_DGNFILE) which also highlights the open file.

Key-ins con't

Set grid point distance horizontal
GU=<distance>

Set Keypoint divisor
KY=<number>

Set active linestyle
LC=<level number>

Set active dimension level
LD=<level number>

Maximum text line length
LL=<number of char.>

Text Line Spacing
LS=<distance>

Set active line terminator
LT=<cell name>

Set Active level
LV=<level>

Turn off level(s)
OF=<level(s)>,data pt. view

Turn on level(s)
ON=<level(s)>,data pt. view

Set point cell element
PT=<cell name>

Attach a cell library
RC=<library name>

Open another design file
RD=<file name>

Attach reference file
RF=<design file,model name,logical name,desc.,view name,scale,nesting, on|off>

Rotate view by angle
RV=<angle>data pt. view

Separate fence constents to new file
SF=<design file>

Set spaces in tab
TB=<number of spaces>

Set Text Height
TH=<text height distance>

Set text height and width
TX=<text size>

User commands
UC=<uc name>

More Windows Key Board shortcuts

These basic key board short cuts work with just about every windows program.

- **Copy a selected item:** Ctrl+C
- **Cut a selected item:** Ctrl+X
- **Paste a selected item:** Ctrl+V
- **Undo an action:** Ctrl+Z
- **Redo that thing I just undid:** Ctrl+Y
- **Select everything:** Ctrl+A
- **Print:** Ctrl+P

Switch between open windows

If you have lots of open windows and you're not sure exactly which one you need, press **Alt+Tab**, and get a quick thumbnail view of all open windows. Then, while holding down the Alt key, press the Tab key multiple times until you get to the window you want.

Clear away everything and show the desktop

Windows logo key +D

Use this shortcut when you want to minimize a lot of open windows at once to check something on your desktop. Clutter-to-clean with two fingers.

Minimize the window—Windows logo key +Down Arrow

Minimizing a window is a surefire way to see what's underneath it. And it's fast to use the shortcut. If the window is maximized already (covering the entire screen) it'll go to "normal" size. And if it's normal size, it'll minimize entirely.

Maximize the window— Windows logo key **+Up Arrow**

Maximizing windows works the same way.

Compare and contrast in a snap

Windows logo key **+Left Arrow or Right Arrow**

pressing the Windows logo key , click the Right Arrow key or the Left Arrow key and your browser will slide over to one side. Select another window (such as a Word document) and use the shortcut only with the opposite arrow.

Multitask with multiple monitors

Windows logo key **+Shift+Right Arrow or Left Arrow**

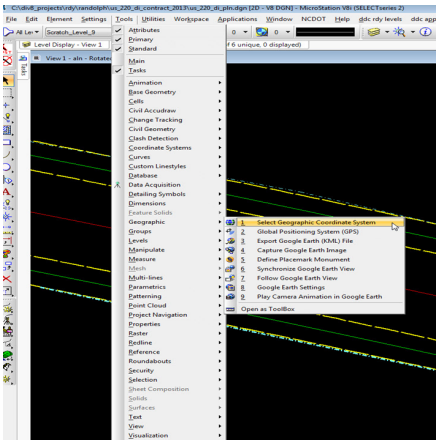
Use more than one monitor at a time? Now you can shift an open window to your other monitor in less than a second.

From the Field—Exporting Graphics to SDV

submitted by Michael Trotter

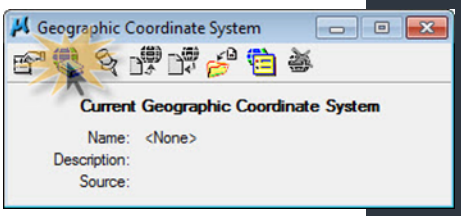
This procedure only works for MicroStation files with *Actual State Plane* coordinates, it will **not** work for files with **assumed** coordinates.

Start with going to **Save As** to **make a copy** of the file you want to export to SDV. **Add** the coordinate system in **the copied file**. Adding a coordinate system to a design file shouldn't mess up your design file, **but** why take the chance? Make a back up of the original file just to be sure.

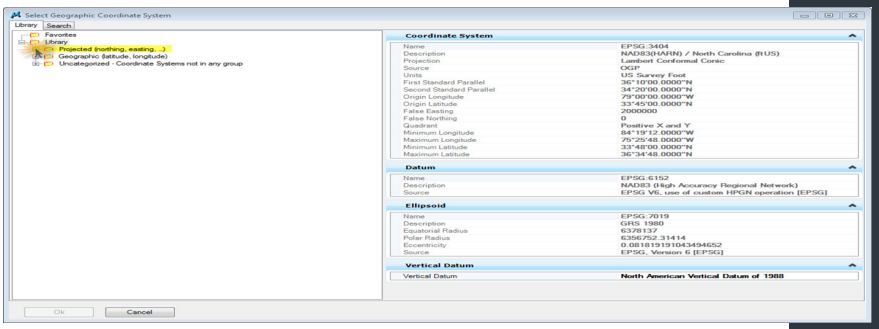


1. Go to **Tools** and select **Geographic** and **Select Geographic Coordinate System**

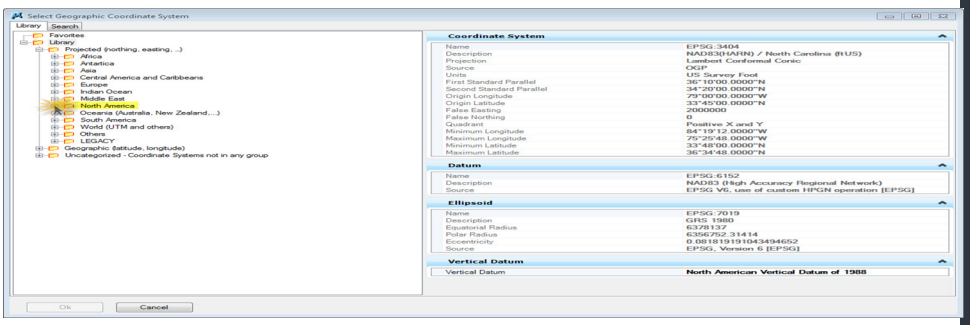
2. The **Graphic Coordinate System** toolbox will open and click on **From Library**, the second icon from the left.



3. Chose **Project (northing, easting,..)**



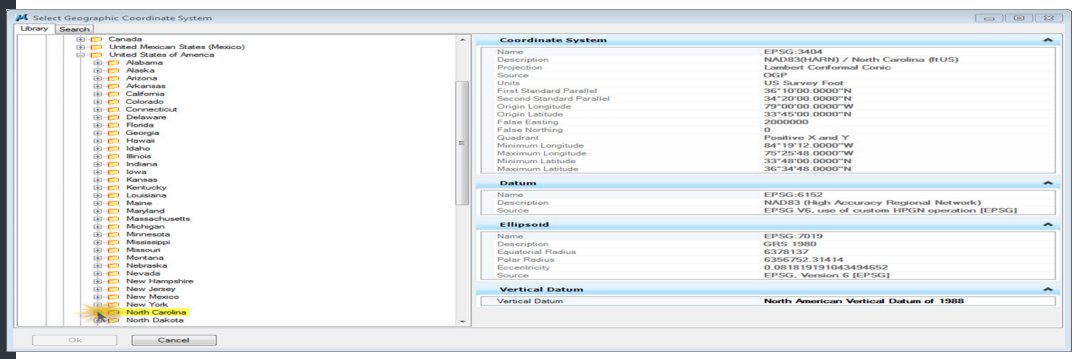
4.. Chose **North America**



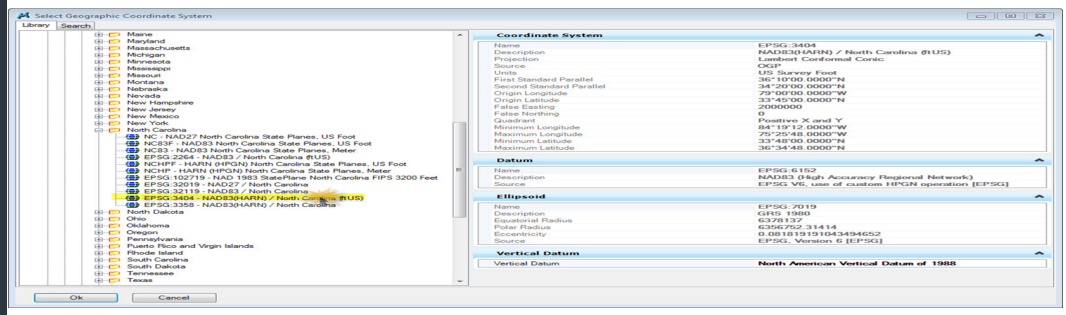
Exporting Graphics to SDV continued from page 5

5. Chose **United States of America**

6. Chose **North Carolina**

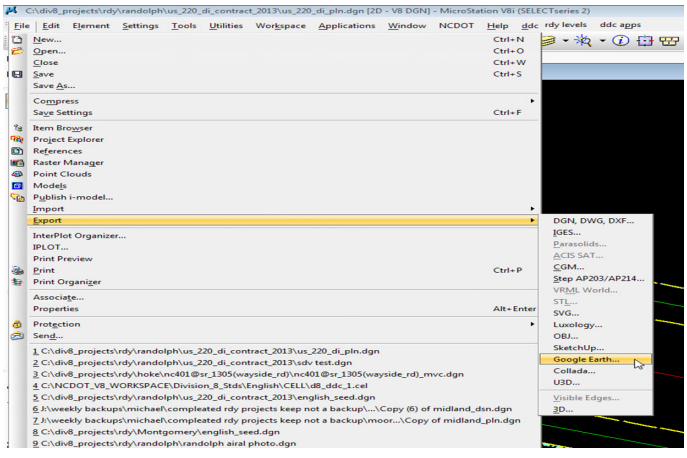


7. Chose **EPSG:3404-NAD83(HARN)/North Carolina (ft US)** and click **OK.**

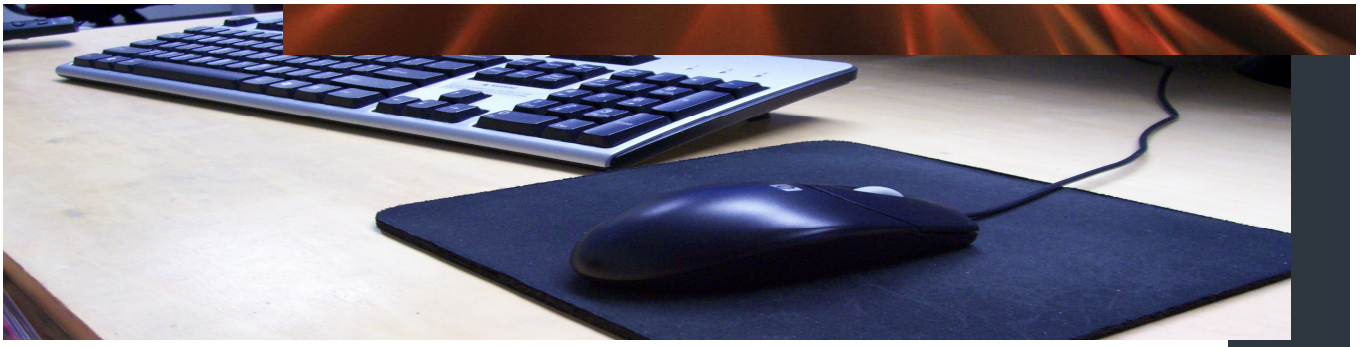


Now you are ready to export the file.

8. Go to **File** and **Export** and chose **Google Earth**. This will export a .kmz file that SDV reads



(continued page 7)

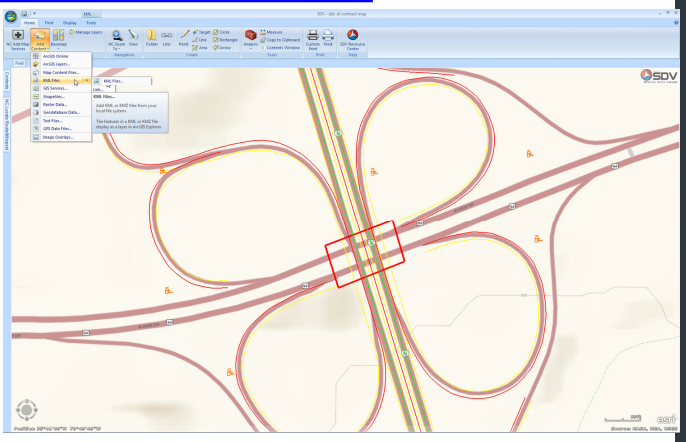


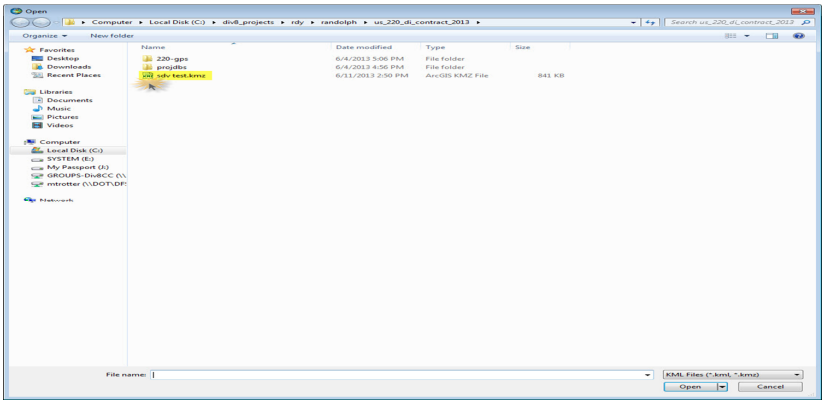
Exporting Graphics to SDV continued from Page 6

The name defaults to the name of the design file, but you can change it if you like. Pick a place to save the .**kmz** file, and select **Save**. Now you are done with MicroStation. Delete the **copied** design file that you have been working in, so you don't **accidentally** use it again.

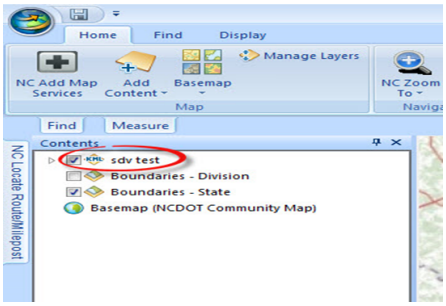
9. Now open SDV and Select **Add Content** and **KML Files** and chose **KML Files**.

10. Find and chose your **.kmz** file.





11. The file is now added to your **SDV Map** session and will show up in the **Contents** window.



Raster Image Files

A Raster file is an image that is composed of thousands of individual dots or pixels. A Raster image file can be used in MicroStation as a background or with a proposed design as complementary images.

There are 3 types of Raster image files:

- Monochrome (1-bit): These black and white images are the simplest of Raster files.
- Mapped (4 or 8-bit) color: Mapped color images are very useful in capturing continuous tone or grey scale images such as black and white photographs.
- Full (24-bit) color, mapped or RGB. The third image type is full color or RGB (red green blue). This image type provides the closest match to the original document. Normally used with color photographs.

MicroStation lets you attach reference raster files in any of over a dozen formats including:
.png .cit .cot .rgb .rle .jpg .pcx .pct .eps .rs .tga .tif .bmp .wpg

SDV Online

Need access to The NCDOT's GIS information but don't have ARC View or the Spatial Data Viewer (SDV) installed on your computer. Then give SDV Online a try at

http://gisi01.dot.nc.net/GISApps/SDVOnline

SDV Online is a web-based solution providing access to many of the same GIS data sets, services, and tools available through SDV 1.0, to anyone with a computer, browser, and access to the NCDOT network. Additionally, SDV Online provides access to services published to ArcGIS Online (AGOL).

For more information, a quick reference guide and the SDV user Guide visit.

https://inside.ncdot.gov/Projects/gis-upgrades/Pages/SDVOnlineHome.aspx

Last Word

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Engineering Applications Service
CADD Services

https://connect.ncdot.gov/resources/CADD/Pages/default.aspx

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https://inside.ncdot.gov/Business/technology/Pages/Tech-CADDServices.aspx

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CADD News Quote of the Issue

"Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them."
-Laurence J